

## CLAIMS

What is claimed is:

- 5           1.       A method of managing resources of an information system  
relative to clients of the system, the method comprising:  
            receiving a quality of service (QoS) message from a client expressing at  
least one QoS requirement as at least one parameter value;  
            establishing a contract with the client for quality of service based on the at  
least one parameter value; and  
10           allocating at least one resource of the system to the client based on the  
contract.
2.       The method of claim 1, wherein the client expresses the at  
least one QoS requirement in a plurality of categories of QoS characteristics.
- 15           3.       The method of claim 1, further comprising governing  
interaction of the client with the system based on the contract.
4.       The method of claim 1, further comprising:  
20           receiving a plurality of QoS messages from a plurality of the clients; and  
allocating resources of the system based on a resource allocation policy.
5.       The method of claim 1, wherein allocating at least one  
resource comprises using a common management interface to implement at least  
25           one self-configurable resource.
6.       The method of claim 5, wherein implementing at least one  
self-configurable resource comprises implementing a resource as an object of a  
subclass of an abstract resource class.
- 30           7.       The method of claim 1, further comprising using the at least  
one parameter value to set at least one QoS value for the at least one resource.

8. The method of claim 1, further comprising:  
monitoring QoS parameters in the contract at runtime; and  
adapting the allocation of resources and their parameters in response to a  
variance by the client from the contract.

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9. The method of claim 1, wherein establishing a contract  
comprises allowing the client to revise the parameter values to become  
consistent with a resource allocation policy of the system.

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10. The method of claim 1, wherein the information system  
includes a service-oriented architecture (SOA), said method performed as a  
service invoked by the client.

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11. The method of claim 1, further comprising:  
receiving a plurality of QoS messages from a plurality of clients preparing  
to publish or subscribe a message or request a task execution; and  
establishing contracts with the clients for quality of service based on their  
requirements expressed in the QoS messages.

12. A management apparatus for managing quality of service (QoS) in an information system, the management apparatus comprising:

5 means for receiving at least one QoS requirement from at least one client of the information system;

means for using the at least one QoS requirement to establish at least one contract with the at least one client for quality of service; and

means for managing at least one resource of the system in accordance with the at least one contract.

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13. The management apparatus of claim 12, further comprising means for expressing and querying a plurality of levels of QoS policies defined for network systems.

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14. The management apparatus of claim 12, wherein the managing means comprises means for allocating at least one resource of the information system to a client based on at least one of a policy and the at least one contract.

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15. The management apparatus of claim 12, wherein the managing means comprises means for changing a QoS attribute of an allocated resource based on a variance from the at least one contract.

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16. The management apparatus of claim 12, wherein the managing means manages the at least one resource using a common management interface.

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17. The management apparatus of claim 12, wherein the managing means is decoupled from a platform for which the at least one resource is implemented.

18. The management apparatus of claim 12, wherein the information system comprises a service-oriented architecture (SOA), the management apparatus further configured as one of a plurality of services of the information system.

19. A QoS management service for use in an enterprise system having a service oriented architecture (SOA), the QoS management service comprising a plurality of component services configured to:

5 receive a QoS message from a service requester of the enterprise system expressing at least one QoS parameter;

establish with the service requester a QoS contract that includes the at least one QoS parameter;

monitor the QoS parameters in the contract; and

10 manage at least one resource of the enterprise system based on the monitoring.

20. The QoS management service of claim 19, wherein the component services are further configured to adapt at least one resource of the  
15 enterprise system based on the monitoring.

21. The QoS management service of claim 19, wherein the component services are made available to the service requester by a service provider of the enterprise system.

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22. The QoS management service of claim 19, wherein the component services are configured to manage a plurality of resources of the enterprise system based on a plurality of QoS contracts with a plurality of service requesters.

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23. The QoS management service of claim 22, wherein the plurality of service requesters comprise tasks and messages.

24. The QoS management service of claim 19, wherein the  
30 component services are configured in a middleware layer of the enterprise system.

25. A machine-readable medium for use with a processor having a memory, the machine-readable medium comprising:

instructions to cause a processor to receive a quality of service (QoS)  
5 message from a client of an information system expressing at least one QoS requirement as at least one parameter value;

instructions to cause a processor to establish a contract with the client for quality of service based on the at least one parameter value; and

instructions to cause a processor to allocate at least one resource of the  
10 information system to the client based on the contract.

26. An apparatus comprising:

a memory device for receiving a quality of service (QoS) message from a client of an information system; and

5 a processor configured to read the memory device and establish a contract with the client for quality of service based on at least one parameter value in the QoS message.

27. The apparatus of claim 26, wherein the processor is further  
10 configured to manage at least one resource of the information system based on the contract.

28. A QoS management service for use in an enterprise system having a service oriented architecture (SOA), the QoS management service comprising:

5 a QoS manager configured to receive a QoS message from a client of the system expressing at least one QoS parameter;

an establishment service configured to establish with the client a QoS contract that includes the at least one parameter; and

10 a resource manager configured to allocate at least one resource of the system based on the contract.

29. The QoS management service of claim 28, further comprising a policy manager configured to:

15 check at least one policy of the system with regard to the at least one QoS parameter; and

determine at least one resource for satisfying a requirement of the client expressed in the at least one QoS parameter.

30. The QoS management service of claim 28, further comprising an operation service configured to commit and initialize the at least one resource.

31. The QoS management service of claim 28, further comprising a prediction service configured to:

25 track system conditions in terms of the at least one QoS parameter; and predict a future system condition based on the tracked conditions.

32. The QoS management service of claim 28, further comprising an adaptation service configured to change a resource based on the at least one QoS parameter.